Remarks/Arguments

This Amendment is filed in response to the Office Action mailed March 18, 2010. Claims 1-7 and 24-38 are pending. With this Amendment, claims 24-38 are newly presented. The new claims find support in the original specification, claims, and drawings as filed. No new matter has been added. Reconsideration and reexamination are respectfully requested.

Rejection under 35 U.S.C. § 103

In paragraph 2 of the Office Action, claims 1-7 were rejected as being unpatentable over Pouchak (U.S. Patent No. 6,536,678) in view of Christiansen (U.S. Patent No. 5,452,687). After careful consideration, Applicants must respectfully disagree. Claim 1 recites:

> 1. (Previously Presented) A method of operating a multistage modulating boiler system, the multi-stage modulating boiler system including two or more stages of modulating boilers, the multi-stage modulating boiler system adapted to provide heat to a circulating fluid heated by the multi-stage modulating boiler system and to maintain a first temperature setpoint, the method comprising:
>
> receiving an indication that a stage of the multi-stage modulating boiler system should be activated and whether the stage is currently a first stage of the multi-stage modulating boiler to be activated;
>
> receiving a normal firing rate for the stage, the normal firing rate is based on an error signal that is related to a deviation between the first temperature set point and a temperature of the circulating fluid in the multi-stage modulating boiler system;
>
> activating the stage at the normal firing rate if the stage is not the first stage of the multi-stage boiler to be activated;
>
> activating the stage at a first firing rate if the stage is the first stage of the multi-stage boiler to be activated, wherein the first firing rate is less than the normal firing rate;
>
> maintaining the first firing rate for a period of time unless a predefined condition that is related to a system temperature occurs during the period of time; and
>
> activating the stage at the normal firing rate after the period of time expires.

Neither Pouchak nor Christiansen, taken alone or in combination, appear to teach, disclose or suggest many of the elements of claim 1.

For example, neither Pouchak nor Christiansen appear to disclose the steps of "activating the stage at the normal firing rate *if the stage is not the first stage* of the multi-stage boiler to be

activated" and "activating the stage at a first firing rate *if the stage is the first stage* of the multi-stage boiler to be activated...", particularly when taken in combination with the other elements of the claim. Notably, these elements do not appear to be addressed in the rejection of claim 1 in the Office Action. The Examiner also does not appear to address the step of "activating the stage at the normal firing rate after the period of time expires" (especially when taken in combination with the step of "maintaining the first firing rate for a period of time unless a predefined condition that is related to a system temperature occurs during the period of time"). It is axiomatic that:

> **2143.03All Claim Limitations Must Be**>Considered< [R-6]**
> ** "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

(see, MPEP § 2143.03). Since these and other elements of claim 1 are not addressed in the rejection, the rejection of claim 1 is in clear error.

The Examiner also states that Pouchak discloses maintaining the first firing rate ~~for a period of time~~ unless a predefined condition ~~that is related to a system temperature~~ occurs ~~during the period of time~~. The crossed out language is contained in claim 1, but is missing from the Examiner's rejection. It appears that these elements were also not addressed by the Examiner in the rejection.

With respect to the predefined condition, the Examiner cites to the "emergency mode" 280 of Pouchak as being equivalent. This is not understood. The "emergency mode" 280 of Pouchak is discussed at column 11, line 1 through column 12, line 3:

> Multiple boiler arbitration logic module 102a has a number of additional inputs including system factory test 264, system waterflow 266, manual 268, low gas pressure 270, pump status 272, freeze protection 274, disabled mode 278 and emergency mode 280. For simplicity, only representative inputs are shown. Arbitration logic module 102a responds through a network interface module (not shown) with arbitration encoded signal 282 which is received by network interface module 228 and provided to CCD 104. The functioning of CCD 104 in the multiple boiler implementation is as described under the HIP 100 description for the single boiler embodiment and includes the ability to display status

> information from a multiple boiler system as well as individual boilers within the multiple boiler system (emphasis added).

It is not seen how this passage (or any other passage of Pouchak) discloses that the "emergency mode 280" is a predefined condition, and more particularly, a predefined condition that is related to a system temperature, and even more particularly, where Pouchak discloses "maintaining the first firing rate for a period of time unless a predefined condition that is related to a system temperature occurs during the period of time", as recited in claim 1.

The Examiner acknowledges that Pouchak does not disclose varying the firing rate so that the initial firing rate is lower than the normal firing rate. However, the Examiner states that:

> Christiansen discloses a boiler control system where the initial firing rate (FR) is set by the user (col. 4, lines 4-33), and the initial firing rate continues for a set time period (P91). After the set time period, the firing rate is at a new firing rate (FRold).

Applicants do not understand this assertion. The cited portion of Christiansen states:

> At startup, the various parameters are set at default settings. More particularly, the following parameters labeled P.sub.N for identification in the flow charts of FIGS. 3-3B are involved in the algorithm incorporated in the microprocessor-based sequencer that further protects the boiler's tubes from thermal shock: the Process Variable (PV), the current Process Variable value (PV.sub.NEW), the previous Process Variable value (PV.sub.OLD), the preferred set-point for the output level (P.sub.5), the adjusted set-point for the output level (P'.sub.5), the running time from the end of the preceding minimum response (P.sub..SIGMA.), the deadband constant (P.sub.13), the process variable minimum response time (P.sub.99), the process variable minimum response required (P.sub.95), the boiler response interval (P.sub.91), the firing rate (FR), the adjusted firing rate (FR.sub.NEW), the current firing rate (FR.sub.OLD), the decrease return factor (P.sub.79), the decrease span range (P.sub.87), the maximum increase/decrease factor (P.sub.111), the maximum process variable value (P.sub.11), the threshold minimum process variable value (P.sub.12), a forced low firing rate value (P.sub.103), a forced high firing rate value (P.sub.107), an increase return factor (P.sub.71), an increase span range (P.sub.83), the decrease leaving factor (P.sub.75), the increase leaving factor (P.sub.67), and an adjustable nudge factor (P.sub.115). The microprocessor based controller of the present invention has the capability to differentiate between a PV offset from the set-point associated with a true demand for accelerating the firing rate and an ordinary offset due to a mere change in the set-point or upon turning on of a boiler and can accomodate both.

(see, column 4, lines 4-33.) This passage of Christiansen is dominated by what appears to be a mere listing of parameters, with little to no explanation given as to the significance or meaning of most of the parameters. For example, the Examiner asserts that "P91" is a set time period for which an initial firing rate continues, but in the excerpt above, "P91" is only identified cryptically as "the boiler response interval." Seeking further insight, Applicants' representative searched Christiansen for other occurrences of "P91" that might elucidate its meaning, but found none in either the specification or drawings. Similarly, the phrase "boiler response interval" appears in only one other place: the Summary of the Invention, where it is found unhelpfully amidst a laundry list of "programmable parameter values." Applicants submit that the cited portions of Christiansen cannot fairly be said to teach that "the initial firing rate continues for a set time period (P91)", as asserted by the Examiner.

The Examiner further states on page 3 of the Office Action that "Christiansen teaches increasing the firing rate after the initial rate is established", citing to column 4, lines 54-56, which states:

> If the process variable is returning, the firing rate is increased in proportion to the rate of change in the process variable.

However, Applicants submit that this excerpt is better understood in the context in which it is found:

> If the process variable is above the preferred set-point, the sequencer then determines whether the process variable is leaving from or returning to the preferred set-point. If the process variable is returning, the firing rate is increased in proportion to the rate of change in the process variable. If the process variable is leaving from the preferred set-point, the firing rate is reduced in proportion to the rate of change in the process variable. If the process variable is below the preferred set-point, it is determined whether the process variable is leaving from or returning to the preferred set-point. If the process variable is returning to the preferred set-point, the firing rate is reduced slowing down the rate of change in output. If, however, the process variable is below and leaving the preferred set-point, the firing rate is increased in proportion to the rate of change in output.

(see, column 4, lines 51-66). As can be seen, this passage of Christiansen appears to disclose a number of conditions to be considered that may lead to the firing rate being increased *or reduced*. As such, this passage cannot be seen to teach what the Examiner asserts.

In addition Applicants submit that that Examiner's stated rationale for combining Pouchak and Christiansen is improper. As the Examiner is well aware:

> The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Court quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that "'[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.'" *KSR*, 550 U.S. at ___, 82 USPQ2d at 1396 (emphasis added).

(MPEP § 2141). In the Office Action, the Examiner merely states:

> It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Pouchak apparatus with the firing rates taught by Christiansen, in order to allow the user to customize the firing rates as desired (col. 4, lines 45-49).

Why would one of ordinary skill in the art be motivated "to allow the user to customize the firing rates as desired"? As it presently stands, the Examiner's statement does not provide an articulated reasoning with rational underpinnings, but is instead merely a conclusory statement. Per KSR, an obviousness rejection cannot be sustained by such a mere conclusory statement.

Claim 1 recites a specific method that includes a combination of specific method steps. Pouchak and Christiansen, taken alone or together, clearly do not teach, disclose or suggest the specific method recited in claim 1. For these and other reasons, claim 1 is believed to be clearly patentable over Pouchak in view of Christiansen. For similar and other reasons, claims 2-7, which depend from claim 1 and add significant additional features, are also believed to be clearly patentable over Pouchak in view of Christiansen. Reconsideration and withdrawal of the rejection are respectfully requested.

New claims

Following the indication of allowable subject matter in the Office Action dated February 18, 2009, claims 8-23 were cancelled without prejudice in accordance with Applicants' desire to proceed to issuance expeditiously. In view of the withdrawal of the indication of allowable

subject matter, new claims 24-38 are presented with this amendment and are also believed to be in condition for allowance.

Conclusion

Reconsideration and reexamination are respectfully requested. It is believed that all pending claims 1-7 and 24-38 are in condition for allowance. If a telephone conference would be of assistance, the Examiner is encouraged to contact the undersigned attorney at 612-359-9348.

Respectfully Submitted,

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